

REMARKS

Claims 1-12 and 14 are pending in this application. By this Amendment, claims 6, 8, 10 and 12 are amended and claim 14 is added. Withdrawn claim 13 is canceled without prejudice to or disclaimer of the subject matter recited therein. Applicants reserve the right to pursue the subject matter of canceled claim 13 in a continuing application. Claim 6 is amended to clarify some of the features. Support for the amendments can be found, for example, at pages 17, 24 and 25, and Figs. 3J-3L, of the application as filed. Claims 6, 8 and 10 are amended to correct an obvious informality. Claim 12 is amended to remove a double dependency. Claim 12 now solely depends from claim 10 and now contains the features of claims 1 and 5. Claim 14 is supported, for example, in Figs. 2A and B. No new matter is added.

The courtesies extended to Applicants' representatives by Examiner Huson at the personal interview held March 11, 2008, are appreciated. The reasons presented at the interview as warranting favorable action are incorporated into the remarks below, which constitute Applicants' record of the interview.

The Office Action rejects claims 1, 2, 4-6, 8-10 and 12 under 35 U.S.C. §102(b) over Horie et al. (U.S. Patent No. 5,138,687) (Horie) and rejects claims 3, 7 and 11 under 35 U.S.C. §103(a) over Horie. The rejections are respectfully traversed.

Applicants respectfully disagree with the Office Action's assertion that Horie discloses all of the features recited in independent claim 1. Horie fails to disclose or suggest laying a thread which does not transmit rays used for subsequent exposure on a substrate for a master plate, as recited in independent claim 1. The Office Action asserts that element 12 in Fig. 6a of Horie corresponds to the claimed thread; however, element 12 of Horie is disclosed as a rib section formed through electron beam lithography. Horie discloses an electron beam resist is applied to the substrate 11 and the resist is subsequently exposed to an electron beam. The

beam is used to draw the rib pattern. The resist is then developed to form the rib, element 12. See Horie, col. 25, lines 30-36. Thus, Horie fails to disclose or suggest laying a thread which does not transmit rays used for subsequent exposure on a substrate of a master plate, as recited by independent claim 1.

Further, Horie fails to disclose or suggest applying a positive resist material onto the master substrate, as recited by independent claim 1. Horie discloses depositing an Ni layer onto substrate 11 and rib 12 to form Ni stamper 13 through an electro forming process. See col. 25, lines 37-41. Ni is not a positive resist material. Moreover, Horie fails to disclose radiating parallel rays substantially vertically to the substrate for the master plate to expose the positive resist material to the rays, as recited by independent claim 1. Horie discloses removing the Ni stamp 13 from the substrate 11 and rib 12. No irradiation occurs prior to this step, and therefore even if the Ni is considered to be the resist material, it is not irradiated to expose the Ni material.

The Office Action asserts that the irradiation step occurs in Fig. 6f of Horie. However, Fig. 6f shows irradiation of an optical wave guide that has been stamped. The master plate (which the Office Action correlates to substrate 11 and rib 12) is no longer present in Fig. 6f. Additionally, Horie discloses that in Fig. 6f, a UV-setting resin is exposed and solidifies forming a rib waveguide. See Horie, col. 25, lines 53-55. Thus, Horie fails to disclose or suggest developing the exposed positive resist material on the master substrate for the master plate to form a convex portion corresponding to a shape of an optical waveguide core, as recited by independent claim 1.

Thus, for at least these reasons, independent claim 1 is patentable over Horie.

Regarding independent claim 6, Applicants amend claim 6 as suggested by Examiner Huson at the March 11 personal interview. Claim 6 is amended to clarify that the mold (for example, component 34 of Applicants' Fig. 3) is brought into contact with clad substrate (for

example, component 36 of Applicants' Fig. 3) and then the concave portion of the mold is filled. Horie discloses a stamping process to form the core to the optical waveguide, as exemplified in Fig. 6 of Horie. Horie discloses that UV-setting resin 2A on substrate/buffer 1/4 is brought up against Ni stamper 13. The shape of stamper 13 shapes the resin 2A to form a rib. Subsequently, the resin 2A is exposed to UV-light, setting the resin 2A. The stamper 13 is removed and rib waveguide core components 2 and 2a are formed. See Horie Figs. 6c-6g and the corresponding description at col. 25, lines 38-64. Thus, Horie fails to disclose or suggest bringing a clad substrate into contact with the mold so that the concave portion faces the clad substrate and filling the concave portion of the mold after the mold has been brought into contact with the clad substrate with a core-forming curable resin, as recited by independent claim 6. Substrate/buffer 1/4 of Horie does not contact the stamper 13. Thus, claim 6 is patentable over Horie for at least this reason.

Horie fails to disclose or suggest the combination of features recited in independent claim 10. Horie fails to disclose or suggest applying a clad-forming curable resin onto a clad substrate to form a resin layer and pushing the convex portion of a polymeric waveguide-forming master plate against the resin layer, curing the resin layer to form a cured resin layer having a concave portion corresponding to the convex portion of the polymeric optical waveguide-forming master plate, and separating the polymeric optical waveguide-forming master plate and filling the concave portion of the cured resin layer with a core-forming curable resin, as recited by independent claim 10. As discussed above, Horie discloses stamping a UV-setting resin to form a rib waveguide core. Horie then forms a clad layer by depositing resin 3A on core 2. Therefore, Horie presses a core-forming layer 2A into a Ni stamp 13 to form a waveguide core. The clad layer is then formed over the waveguide core, thus form-fitting the core. However, Horie is not pushing a master plate against a clad-forming resin layer to form a clad layer, and subsequently filling the concave section of the

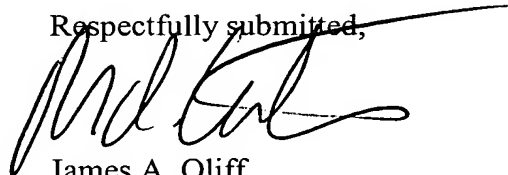
clad-forming layer with a core-forming curable resin. Therefore, independent claim 10 is patentable over Horie.

Independent claims 1, 6 and 10 are patentable over Horie. Claims 2-5, 7-9, 11, 12 and 14 depend from claims 1, 6, and 10 respectively, and therefore are also patentable over Horie for at least the same reasons, as well as for the additional features they recite. Withdrawal of the rejections is respectfully requested.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of all pending claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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